

CLAIMS

What is claimed is:

1. An apparatus, comprising:

5 a computer component that receives one or more images of one or more packaging materials from one or more imaging components;

wherein the computer component employs an analysis of the one or more images to make a determination of a package integrity of the one or more packaging materials.

2. The apparatus of claim 1, wherein the computer component employs one or more algorithms to conduct the analysis of one or more of the one or more images to
10 make the determination of the package integrity of the one or more packaging materials.

3. The apparatus of claim 1, wherein the one or more packaging materials comprise one or more seal regions, wherein the package integrity comprises a seal region integrity, wherein the computer component employs the analysis of the one or more images to make the determination of the seal region integrity of the one or more seal
15 regions.

4. The apparatus of claim 1, wherein the computer component employs one or more irradiation components to emit one or more radiation wavelengths to the one or more packaging materials, wherein the computer component employs the one or more imaging devices to create the one or more images.

5. The apparatus of claim 4, wherein the one or more packaging materials allow a transmittance of one or more of the one or more radiation wavelengths;

wherein the computer component employs one or more of the one or more irradiation components to emit the one or more of the one or more radiation wavelengths
5 for the transmittance through one or more of the one or more packaging materials, wherein the one or more of the one or more radiation wavelengths reflect off a carrier of the one or more of the one or more packaging materials to the one or more imaging devices.

6. The apparatus of claim 4, wherein the one or more packaging materials
10 allow a transmittance of one or more of the one or more radiation wavelengths;

wherein the computer component employs one or more of the one or more irradiation components to emit the one or more of the one or more radiation wavelengths for a transmittance through one or more of the one or more packaging materials; wherein the one or more of the one or more radiation wavelengths transmit directly through the
15 one or more of the one or more packaging materials to the one or more imaging devices.

7. The apparatus of claim 4, wherein one or more of the one or more packaging materials allow a reflection of the one or more radiation wavelengths;

wherein the computer component employs one or more of the one or more irradiation components to emit the one or more radiation wavelengths at an incident angle
5 to the one or more of the one or more packaging materials;

wherein upon the reflection of one or more of the one or more radiation wavelengths at an angle equal to the incident angle, the computer component employs the analysis to identify one or more dark regions in the one or more images, wherein the one or more dark regions indicate the package integrity to the computer component.

10 8. The apparatus of claim 4, wherein one or more of the one or more packaging materials allow a reflection of the one or more radiation wavelengths;

wherein the computer component employs one or more of the one or more irradiation components to emit the one or more radiation wavelengths at a low incident angle to the one or more of the one or more packaging materials;

15 wherein upon the reflection of one or more of the one or more radiation wavelengths different from the low incident angle, the computer component employs the analysis to identify one or more bright regions in the one or more images, wherein the one or more bright regions indicate the package integrity to the computer component.

9. The apparatus of claim 4, wherein the computer component employs the
20 one or more irradiation components to emit one or more of the one or more radiation wavelengths through one or more optical components.

10. The apparatus of claim 9, wherein one or more of the one or more packaging materials comprise one or more graphics, wherein the computer component employs one or more of the one or more imaging devices to determine one or more absorption spectrums of the one or more graphics;

5 wherein the computer component employs the one or more of the one or more irradiation components to emit the one or more of the one or more radiation wavelengths to the one or more of the one or more packaging materials, wherein the computer component employs the one or more optical components to filter out the one or more absorption spectrums from the one or more of the one or more radiation wavelengths.

10 11. The apparatus of claim 9, wherein the computer component employs the one or more of the one or more irradiation components and the one or more optical components to create the one or more of the one or more radiation wavelengths, wherein the one or more of the one or more radiation wavelengths contact one or more of the one or more packaging materials.

12. The apparatus of claim 9, wherein the one or more of the one or more irradiation components comprise one or more fluorescing excitation sources, wherein the one or more optical components comprise a first band-pass filters, wherein the first band-pass filter allows the one or more of the one or more radiation wavelengths of the one or more fluorescing excitation sources to pass through to one or more of the one or more packaging materials;

wherein one or more compounds within the one or more of the one or more packaging materials react to the one or more of the one or more radiation wavelengths of the one or more fluorescing excitation sources, wherein the one or more compounds emit one or more fluorescing wavelengths;

wherein the one or more optical components comprise a second band-pass filters, wherein the second band-pass filter allows the one or more fluorescing wavelengths to pass through to the one or more imaging devices.

13. The apparatus of claim 1, wherein the computer component employs one or more material handling components to cause one or more deformations in one or more of the one or more packaging materials;

wherein the computer component receives one or more images of the one or more deformations from the one or more imaging components;

wherein the computer component employs an analysis of the one or more deformations to make a determination of the package integrity of the one or more of the one or more packaging materials.

14. The apparatus of claim 1, wherein the computer component receives the one or more images of the one or more packaging materials from the one or more imaging components to perform an automated inspection of the package integrity of the one or more packaging materials.

15. A method, comprising the steps of:

employing one or more irradiation components to emit one or more radiation wavelengths to one or more packaging materials;

receiving one or more images of the one or more packaging materials from one or more imaging components; and

employing one or more analysis algorithms on the one or more images to make a determination of a package integrity of the one or more packaging materials.

16. The method of claim 15, wherein the one or more packaging materials allow a transmittance of one or more of the one or more radiation wavelengths, wherein the one or more imaging devices create the one or more images of the one or more packaging materials, wherein the step of receiving the one or more images of the one or more packaging materials from the one or more imaging components comprises the steps of:

employing the one or more irradiation components to emit the one or more of the one or more radiation wavelengths for the transmittance through the one or more packaging materials; and

receiving the one or more images from the one or more imaging devices upon a reflection of the one or more of the one or more radiation wavelengths off a carrier of the one or more packaging materials to the one or more imaging devices.

17. The method of claim 15, wherein the one or more packaging materials allow a transmittance of one or more of the one or more radiation wavelengths, wherein the one or more imaging devices create the one or more images of the one or more packaging materials, wherein the step of receiving the one or more images of the one or more packaging materials from the one or more imaging components comprises the steps of:

employing the one or more irradiation components to emit the one or more of the one or more radiation wavelengths for the transmittance through the one or more packaging materials; and

10 receiving the one or more images from the one or more imaging devices images upon the transmittance of the one or more of the one or more radiation wavelengths through the one or more packaging materials to the one or more imaging devices.

18. The method of claim 15, wherein the one or more packaging materials allow a reflection of the one or more radiation wavelengths, wherein the step of employing the one or more analysis algorithms on the one or more images to make the determination of the package integrity of the one or more packaging materials comprises

5 the steps of:

employing the one or more irradiation components to emit the one or more radiation wavelengths at an incident angle to the one or more packaging components;

receiving the one or more images from the one or more imaging devices upon the reflection of one or more of the one or more radiation wavelengths at an angle equal to

10 the incident angle;

employing the one or more analysis algorithms to identify one or more dark regions of the one or more images; and

employing the one or more dark regions of the one or more images to make the determination of the package integrity to the computer component.

19. The method of claim 15, wherein the one or more packaging materials allow a reflection of the one or more radiation wavelengths, wherein the step of employing the one or more analysis algorithms on the one or more images to make the determination of the package integrity of the one or more packaging materials comprises

5 the steps of:

employing one or more of the one or more irradiation components to emit the one or more radiation wavelengths at a low incident angle to the one or more packaging components;

10 receiving the one or more images from the one or more imaging devices upon the reflection of one or more of the one or more radiation wavelengths at an angle different from the incident angle; and

employing the one or more analysis algorithms to identify one or more bright regions of the one or more images;

15 employing the one or more bright regions of the one or more images to make the determination of the package integrity to the computer component.

20. The method of claim 15, wherein the one or more packaging materials comprise one or more graphics, wherein the step of employing the one or more irradiation components to emit the one or more radiation wavelengths to the one or more packaging materials comprises the steps of:

5 employing the one or more imaging devices to determine one or more absorption spectrums of the one or more graphics; and

employing the one or more irradiation components to emit one or more of the one or more radiation wavelengths through one or more optical components, wherein the one or more optical components filter out the one or more absorption spectrums from the one or more of the one or more radiation wavelengths.

10

21. The method of claim 15, wherein the one or more irradiation components comprise one or more fluorescing excitation sources, wherein the step of employing the one or more irradiation components to emit the one or more radiation wavelengths to the one or more packaging materials comprises the steps of:

15 employing a first optical component to allow a transmittance of one or more of the one or more radiation wavelengths from the one or more fluorescing excitation sources through the one or more packaging materials; and

employing a second optical component to allow one or more fluorescing wavelengths emitted by the one or more packaging materials to pass through to the one or more imaging devices.

20

22. An article, comprising:

one or more computer-readable signal-bearing media;

means in the one or more media for employing one or more irradiation
components to emit one or more radiation wavelengths to one or more packaging
5 materials;

means in the one or more media for receiving one or more images of the one or
more packaging materials from one or more imaging components; and

means in the one or more media for employing one or more analysis algorithms
on the one or more images to make a determination of a package integrity of the one or
10 more packaging materials.

* * * * *